

water vapor.

The invention is especially useful for manufacturing an extremely small RF transceiver. Such a transceiver can be made extremely thin by manufacturing it on a sheet of polymer film. Even a very thin polymer film can have excellent mechanical durability.

It would be advantageous to protect the transceiver from contamination by water vapor, but many materials that are good barriers against water vapor are poorly suited for use as covers of a miniature device. For example, either silicon oxide or silicon nitride would be a good barrier against water vapor. However, if either were the sole constituent of a thin cover, the cover would be unacceptably brittle and fragile and therefore susceptible to cracking or other damage.

The invention provides a superior cover for a transceiver by combining the advantages of two materials: a polymer film having advantageous mechanical durability, and a second layer that advantageously is a barrier to water vapor, but that might be too fragile if used alone.

The invention is patentable because none of the prior art discloses or suggests a *two layer* cover having both a polymer layer and a water vapor barrier layer.

All the claims were rejected under 35 USC 103 as obvious over Anders in view of Holland and either Christenson or Nath.

Anders was cited as teaching “a process for manufacturing a transceiver 13 comprising the steps of attaching a chip to a micro-battery using an antenna.” First, the undersigned respectively disputes that Anders teaches any manufacturing process. Anders merely states that a battery or an antenna can be attached to a transceiver chip using undefined “appropriate” materials, but discloses no manufacturing processes in either the text or the drawings. Second, since none of Applicant’s pending claims recites either a battery or an antenna, Anders does not appear to have any relevance to the claimed invention.

Holland was cited as teaching an interrogator, an antenna, and “a cover comprising silicon dioxide **or** a polymeric material ... protecting the circuit; see lines 22 to 32 in column 7. Also, Holland teaches that the cover plate 29 may be a laminate.”

The word “or” in the preceding quote is critical to understanding Holland (column 7, line 25). Holland discloses silicon dioxide and polymer materials as mutually exclusive alternatives, not as materials that should be combined as two layers of a single cover. If Holland intended to suggest combining these materials, he would have used the word “and” instead of “or”. Furthermore, since Holland describes these two materials as having identical properties and being interchangeable, he fails to motivate combining them, since doing so would appear to be redundant.

Holland uses the term “laminate” at column 7, line 24. This refers to the cover 29 functioning as a laminate over the substrate 26. It does not refer to the cover 29 itself being composed of polymer and silicon dioxide materials laminated together, because these two materials are delimited by the word

“or” rather than “and” at column 7, line 25.

At column 7, lines 28–30, Holland states that his laminated structure is the same as the structure disclosed in US Patent 4,484,098. A copy of the ’098 patent is submitted with this amendment. The ’098 patent discloses a lithium niobate substrate 6 covered by a layer of silicon dioxide 14. The ’098 patent does not disclose the cover 6 comprising two materials laminated together.

In summary, Holland defines his “laminate” as either silicon dioxide *or* a polymeric material, and the ’098 patent reinforces the interpretation of “laminate” as the cover being the laminate over the substrate rather than the cover itself being composed of two laminations. Therefore, Holland fails to disclose or suggest a *two layer* cover for a transceiver having both a polymer layer *and* a water vapor barrier layer. Accordingly, the claimed invention is patentable over Holland.

Furthermore, Holland only discloses a cover 29 on only one side of the substrate 26. Holland fails to disclose the claimed invention comprising two covers on opposite sides of the transceiver, with each cover comprising two layers, a polymer layer and a water vapor barrier layer. Therefore, the claimed invention is patentable over Holland.

Christenson was cited as teaching a silicon oxide or silicon nitride barrier layer on an electronic device. However, Christenson lacks any disclosure of a polymer layer, so Christenson cannot be considered to suggest a two layer cover having both a polymer layer and a water vapor barrier layer.

Nath was cited as teaching batteries enclosed “between protective laminae 72 which may either be a polymeric film *or* a deposited plasma of silicon dioxide, silicon nitride, or similar compositions; see lines 38 to 47 in column 11.” Nath’s word “or” is critical (column 11, line 46). Nath fails to disclose or suggest a two layer cover. Like Holland, Nath describes these materials as having identical properties and being interchangeable. Therefore, Nath fails to motivate combining them as two layers of a single cover, since doing so would appear to be redundant.

Lastly, on page 6 of the office action, the Examiner cites Holland as disclosing the desirability of a “barrier”. It is important to emphasize that Applicant’s claims all recite a material that is a barrier to water vapor. Neither Holland nor any of the other references mentions water vapor. The mere disclosure of providing a barrier against some kind of contamination does not teach the need for a barrier against water vapor as claimed by Applicant.

Since none of the references discloses or suggests a two layer cover for a transceiver having both a polymer layer *and* a water vapor barrier layer, all of the pending claims are patentable.

#### Claims 28–29 and 47

Dependent claims 28–29 and 47 are further directed to *both sides* of a cover being coated with a that is a water vapor barrier material. An advantage of this invention is that any pinholes or other

microscopic defects in the barrier layer on one side of the cover are unlikely to coincide with defects on the other side. Consequently, the barrier layers can be much thinner than would be required to achieve the same barrier quality if the barrier material were deposited on only one side of the cover.

None of the prior art discloses or motivates depositing a barrier layer on both sides of a cover, nor does the Examiner's rejection even address this feature. Accordingly, 28-29 and 47 are patentable.

Respectfully submitted,



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